

### Claims

1. An optical tracking system for determining the position and/or orientation of an object provided with at least one marker (4), using at least two image recording devices (1) for capturing the image of said at least one marker (4) and at least one succeeding computing device (2, 3) for evaluating the images captured by said image recording devices (1) for computing the position and/or the orientation of the object, **characterized in that** means are provided for retransferring information calculated in said computing device (2, 3) to another computing device (2) and/or to at least one of said image recording devices (1).

2. The optical tracking system of claim 1 characterized in that computing devices (2) allocated to said image recording devices (1) are provided for determining the marker positions in the captured image and that a central computing device (3) is provided for determining the position and/or the orientation of the object, said central computing device (3) is connected to said individual computing devices (2) for transferring the image data to said central computing device (3).

3. The optical tracking system of claim 2 characterized in that the means for retransferring calculated information include means for retransferring information calculated in said central computing device (3) to a computing device (2) allocated to an image recording device (1) and/or to an image recording device (1).

4. The optical tracking system of claim 1 characterized in that the means for retransferring calculated information

include a prediction unit (5), which from the calculated tracking results calculates an expected position and/or orientation information for the object.

5. The optical tracking system of claim 1 characterized in that the means for retransferring calculated information include the data transfer means for the data transfer from an image recording device (1) to said at least one succeeding computing device (2, 3).

6. The optical tracking system of claim 1 characterized in that the information transfer occurs via Ethernet connections.

7. The optical tracking system of claim 1, having at least one lighting device (8, 9, 10) allocated to an image recording device (1) for lighting of reflecting markers (4) characterized in that means are provided for transferring information calculated in a computing device (2, 3) to said lighting device (8, 9, 10).

8. The optical tracking system of claim 7 characterized in that the means for transferring information to said lighting device (8, 9, 10) include a memory (7).

9. The optical tracking system of claim 7 characterized in that the means for transferring information to said lighting device (8, 9, 10) include a look-up table.

10. The optical tracking system of claim 7 characterized in that said lighting device (8, 9, 10) includes a light emitting device (9) divided into a plurality of segments which can be controlled separately by a control unit (8).

11. The optical tracking system of claim 7 characterized

in that said lighting device (8, 9, 10) includes a beam deflecting device (10), in particular, consisting of diffractive or refractive elements.

12. The optical tracking system of claim 11 characterized in that Fresnel prismatic disks represent the refractive elements.

13. A method for determining the position and/or orientation of an object provided with at least one marker (4) wherein the image of said at least one marker (4) is captured by said at least two image recording devices (1) and from the obtained image data the position and/or orientation of the object is calculated by means of at least one computing device (2, 3) **characterized in that** for controlling the computation and/or image recording process, information calculated by a computing device (2, 3) is retransferred to another computing device (2) or to at least one of said image recording devices (1).

14. The method of claim 13 characterized in that output information is retransferred.

15. The method of claim 13 characterized in that information loaded into the system from outside, which is relevant for the position and/or orientation determination, is retransferred.

16. The method of claim 13 characterized in that currently determined position and/or orientation information is retransferred.

17. The method of claim 13 characterized in that on the basis of the current position and/or orientation information, a prediction for the calculation of expected position